Appl. No. 10/652,986
Amdt. dated September 4, 2007
Reply to Office Action of May 4, 2007

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1.   (Currently amended) A computer-readable storage medium having a program for use in a host computer having a function of displaying at a user interface a plurality of management information items expressing access status of relating to a plurality of independent communication paths for sending a data input/output requests from said host computer to a storage device and returning results of the access said data input/output requests to said host computer, said storage device having a plurality of disk drives storing data sent from said host computer and a disk controller controlling to store data sent from said host computer to at least one logical volume corresponding to the plurality of disk drives, each of said communication paths comprising providing communication between a host port of said information processing device, a disk controller port of said disk controller, a communication cable connecting between said host port and said disk controller port, and a logical volume of said storage device, said program comprising:

code configured to monitor status information for each of said communication paths and to store said status information at said host computer, said status information specifying a relationship for each communication path between a path ID of said communication path, a disk controller port ID of said disk controller, and a logical volume ID of said storage device, and wherein said status information includes an access status for each communication path indicating whether said communication path is online or offline;

code configured to operate a data processor in the host computer to update at least one of said management information items being displayed to express the present access status of said a communication path when detecting that access responsive to a change in the status information corresponding to said communication path, the change indicating a failure of the occurs at said communication path based on an access to said storage device, and/or updated

Appl. No. 10/652,986
Amdt. dated September 4, 2007
Reply to Office Action of May 4, 2007

PATENT

information received as input through said user interface; ~~updating at least one of said~~ ~~management information items being displayed when receiving from said user interface an input~~ ~~for updating said management information items being displayed;~~

code configured to operate the data processor to display <u>status</u> information <u>for</u> <u>said plurality of communication paths including the</u> ~~between a~~ communication path ID of said communication path, ~~a~~<u>the</u> disk controller port ID of said disk controller port, ~~a~~<u>the</u> logical volume ID of said logical volume of said storage device, and <u>the access status</u> ~~state~~ of said communication path indicating off-line or on-line; and

code configured to operate the data processor to change the display<u>ed</u> ~~contents~~ <u>management information</u> concerned with the ~~state~~ <u>access status</u> of said communication path from said on-line state into said off-line state in which failure has occurred among displayed plurality of communication paths based on <u>said status information.</u> ~~receiving failure information from said~~ ~~storage device, while a failure has occurred in any one of said displayed plurality of~~ ~~communication paths, wherein said communication path comprises the host port of said~~ ~~information processing device, the communication cable connected to the host port, and the disk~~ ~~controller port of the disk controller to which the communication cable is also connected.~~

2.   (canceled)

3.   (previously presented) The computer-readable storage medium according to claim 1, wherein in accordance with an input for updating said management information items being displayed, all of said management information items being displayed or part of said management information items being displayed is updated to express present access status of a communication path.

4.   (previously presented) The computer-readable storage medium according to claim 3, wherein said part of said management information items to be updated includes at least one of an execution number of data input/output as performed between said storage device and said host computer and a number indicative of access failure occurred at said communication path in proper execution of said data input/output.

Appl. No. 10/652,986
Amdt. dated September 4, 2007
Reply to Office Action of May 4, 2007

PATENT

5.   (Currently amended) A host computer having a function of displaying at a user interface a plurality of management information items concerning access status of relating to a plurality of independent communication paths for sending a data input/output requests from said host computer to a storage device and returning results of access said data input/output requests to said host computer, said storage device having a plurality of disk drives storing data sent from said host computer and a disk controller controlling to store data sent from said host computer to at least one logical volume corresponding to the plurality of disk drives, said host computer each of said communication paths comprising:

a host port which is in communication , via said communication path, with a disk controller port of said disk controller, a communication cable connecting between said host port and said disk controller port, and a logical volume of said storage device, said host computer comprising:

a controller configured to monitor status information for each of said communication paths and to store said status information at said host computer, said status information specifying a relationship for each communication path between a path ID of said communication path, a disk controller port ID of said disk controller, and a logical volume ID of said storage device, wherein said status information includes an access status for each communication path indicating whether said communication path is on-line or off-line,

a said controller further configured to update at least one of said management information items being displayed to express the present access status of said a communication path when detecting that access responsive to a change in the status information corresponding to said communication path, the change indicating a failure of the communication path occurs at said communication path based on an access to said storage device, and/or updated information received as input through said user interface, and to update at least one of said management information items being displayed when receiving from said user interface an input for updating said management information items being displayed;

wherein said management information items include a communication path ID of said communication path, a disk controller port ID of said disk controller port, a logical volume

Appl. No. 10/652,986
Amdt. dated September 4, 2007
Reply to Office Action of May 4, 2007

PATENT

~~ID of said logical volume of said storage device, and state of said communication path indicating~~

~~off-line or on-line; and~~

wherein said controller is configured to change <u>the access status displayed for one</u> <u>or more of said plurality of communication paths</u> ~~a display of the state of said communication~~ ~~path~~ from said on-line state into said off-line state ~~in which~~ <u>when</u> failure has occurred among displayed plurality of communication paths based on <u>said status information.</u> ~~receiving failure~~ ~~information from said storage device, while a failure has occurred in any one of said displayed~~ ~~plurality of communication paths, wherein said communication path comprises the host port of~~ ~~said information processing device, the communication cable connected to the host port, and the~~ ~~disk controller port of the disk controller to which the communication cable is also connected.~~

6.   (canceled)

7.   (previously presented) The host computer according to claim 5, wherein in accordance with an input for updating said management information items being displayed, all of said management information items being displayed or part of said management information items being displayed is updated.

8.   (previously presented) The host computer according to claim 7, wherein said part of said management information items to be updated includes at least one of an execution number of data input/output as performed between said storage device and said host computer and a number indicative of access failure occurring at said communication path in proper execution of said data input/output.

9.   (Currently amended) A control method of a host computer having a function of displaying at a user interface ~~a plurality of~~ management information items ~~concerning access status of~~ <u>relating to a</u> plurality of independent communication paths for sending ~~a~~ data input/output request<u>s</u> from said host computer to a storage device and returning result<u>s</u> of the <u>data input/output</u> request<u>s</u> to said host computer, said storage device having a plurality of disk drives storing data sent from said host computer and a disk controller controlling

to store data sent from said host computer to at least one logical volume corresponding to the

plurality of disk drives, each of said communication paths ~~providing communication between~~

comprising a host port of said information processing device, a disk controller port of said disk

controller, a communication cable connecting between said host port and said disk controller

port, and a logical volume of said storage device, said method comprising:

monitoring status information for each of said communication paths at said host

computer, said status information specifying a relationship for each communication path between

a path ID of said communication path, a disk controller port ID of said disk controller, and a

logical volume ID of said storage device, wherein said status information includes an access

status for each communication path indicating whether said communication path is online or

offline;

updating at least one of said management information items being displayed to

express the present access status of ~~said~~ a communication path ~~when detecting that access~~

responsive to a change in the status information corresponding to said communication path, the

change indicating a failure occurs ~~at said~~ of the communication path ~~based on an access to said~~

~~storage device,~~ and/or updated information received as input through said user interface;

~~updating at least one of said management information items being displayed when receiving~~

~~from said user interface an input for updating said management information items being~~

~~displayed;~~

displaying status information ~~between a~~ for each of said plurality of

communication paths, including the communication path ID, ~~of said communication path, a~~ the

disk controller port ID of said disk controller port, ~~a~~ the logical volume ID of said logical volume

of said storage device, and ~~state~~ the access status of said communication path indicating off-line

or on-line; and

changing the access status displayed for one or more of said plurality of

communication paths ~~display of contents concerned with the state of said communication path~~

~~from said on-line state into said off-line state in which~~ when failure has occurred among

~~displayed~~ the plurality of communication paths displayed at said host computer based on said

status information. ~~receiving failure information from said storage device, while a failure has~~

Appl. No. 10/652,986
Amdt. dated September 4, 2007
Reply to Office Action of May 4, 2007

PATENT

occurred in any one of said displayed plurality of communication paths, wherein each of said communication paths comprises the host port of said information processing device, the communication cable connected to the host port, and the disk controller port of the disk controller to which the communication cable is also connected.

10.   (canceled)

11.   (previously presented) The control method according to claim 9, wherein in accordance with an input for updating said management information items being displayed, all of said management information items being displayed or part of said management information items being displayed is updated.

12.   (previously presented) The control method according to claim 11, wherein said part of said management information items to be updated includes at least one of an execution number of data input/output as performed between said storage device and said host computer and a number indicative of access failure occurring at said communication path in proper execution of said data input/output.

13.   (Currently amended) The computer-readable storage medium according to claim 1, wherein the state of said communication path said management information displayed at said user interface is changed in real time based on receiving failure information from said storage device.

14.   (Currently amended) The host computer according to claim 5, wherein the state of said communication path said management information displayed at said user interface is changed in real time based on receiving failure information from said storage device.

15.   (Currently amended) The control method according to claim 9, wherein the state of said communication path said management information displayed at said user interface is changed in real time based on receiving failure information from said storage device.

Appl. No. 10/652,986
Amdt. dated September 4, 2007
Reply to Office Action of May 4, 2007

PATENT

16.   (New) The computer-readable storage medium according to claim 1, wherein said host computer further comprises a graphical user interface configured to display said management information items, and wherein said status information is updated in response to a selection of said management information items displayed by said graphical user interface.

17.   (New) The host computer according to claim 5, wherein said host computer further comprises a graphical user interface configured to display said management information items, and wherein said status information is updated in response to a selection of said management information items displayed by said graphical user interface.

18.   (New) The control method according to claim 9, wherein said user interface is a graphical user interface configured to display said management information items, and wherein said status information is updated in response to a selection of said management information items displayed at said graphical user interface.